

10/530145

JC06 Rec'd PCT/PTO 31 MAR 2005

1

Device allowing persons, even handicapped persons, to learn to practise roller skating, skateboarding, ice skating, skiing, horse riding and swimming without falling or sinking.

5 TECHNICAL FIELD:

The present invention relates to a device which allows persons to learn, easily and without any risk of falling, to roller skate, skateboard, ice skate, ski on snow or on artificial pistes and also to learn to swim without  
10 any risk of sinking.

Learning these disciplines often leads to falls, sometimes serious falls, in particular in the case of elderly people. Learning to swim often gives rise to the fear of sinking in people, in particular when they know that they  
15 are out of their depth.

The device according to the invention allows all these disadvantages to be overcome. Its use has the advantage that the user never falls or sinks and thus learns without being in a permanent state of fear. Consequently, the  
20 user will learn much more quickly and without any risk how to practise the chosen sport.

PRIOR ART:

25 Various means of ensuring the safety of persons when learning some sports already exist. In circus schools, pupils practising trick horse riding are provided with a harness which is provided with a ring. The supervisor holds a long cord which extends in a pulley which is located at height and at the centre of the track and the cord is secured to the ring of the  
30 harness. When the pupil is at risk of falling from the horse, the supervisor supports him and he is prevented from falling. Swimming instructors hold the pupil by means of a pole, at the end of which a cord is fitted which is attached to the harness of the pupil. In order to learn to ride a bicycle, the solution which has long been used consists in fitting a small wheel at  
35 each side of the rear wheel of the bicycle. At the start, the two small

wheels touch the ground and, little by little, they are raised until the user moves without being supported on one or other of the small wheels.

The device according to the invention allows the pupil to be put  
 5 completely at ease and to improve in complete safety until he completely masters the technique and the practice of the selected discipline.

#### DESCRIPTION OF THE INVENTION:

10 The device according to the invention is depicted in a number of appended drawings which illustrate in detail the whole of the design of the device which is mainly composed of the following base elements:

- 15 - carriers each comprising two posts which are positioned vertically and which support a cross-piece which is held on the posts. Each cross-piece is provided, in the lower portion, with a plurality of securing plates in order to hold the rails by means of locking flanges.
- 20 - Rails which are held under the cross-pieces by locking flanges, the profile of these rails allowing roller type carriages to be held and displaced.
- Horizontal struts which connect the posts at the top and bottom and which hold them in a vertical position.
- 25 - Cross-bracing bars which are intended to strengthen the installation of the device.
- Roller type carriages, to which the straps intended to support the persons are attached.
- 30 - Straps which are adjustable in terms of length and which are provided with a resilient upper portion, which is fixed to the roller type carriages, and a spring hook in the lower portion which is attached to the harness worn by the persons.
- Safety harnesses which are worn by the persons and which are provided with a ring which allows the end of the strap to be attached by the spring hook.

- Low seats which are provided at the front of the base with two hollow indentations which are inclined so that the user can lock his skates whilst getting up.
- Signalling strips which are fixed to the ground at each side of the axis of the tracks.
- Obstacles, such as platforms having inclined planes or steps or jumps or uneven surfaces.
- Systems for audible signalling which are intended to inform partially sighted or blind persons of the proximity and the configuration of an obstacle to be overcome.

The device according to the invention can comprise one or more rails, the length of the cross-pieces which hold the rails being longer or shorter.

- The device can comprise curved rails having larger or smaller radii and different lengths. These curved rails are held under the cross-pieces, in the same manner as the straight rails, with locking flanges. Whether the rails are straight or curved, the carriers remain identical. This device allows a winding circuit to be provided with straight lines, left-hand bends, right-hand bends and bends having larger or smaller radii. The installation of a device of this type is slightly similar to that of a racing circuit having a plurality of lanes for miniature remote-controlled cars.

- The variable configuration of the device according to the invention allows each user (sports schools, amusement parks, rental companies, fairgrounds ...) to be able to install a device ranging from the smallest to the largest, that is to say, a simple straight line or a circular or oval circuit, or a large winding circuit.

- The whole of the structure of the device according to the invention is preferably of light construction in order to be readily manoeuvrable and transportable. This light construction allows ease of assembly and disassembly, as in the case of scaffolds used in civil engineering or some carousels for fairgrounds.

The device according to the invention can be positioned directly on the inclined bottom of a swimming pool or on the uneven bottom of a body of water. In these cases, the posts of the carriers are configured so as to be adjustable in terms of length by any telescopic system with locking in the correct position.

The device according to the invention can be installed at the edge of a skating rink without being supported on the ice in order not to damage the ice. In this case, the carrier comprises only a single post and the cross-piece is self-supporting, the base of the post being securely bolted to anchoring pillars. The same principle can be used for an installation at the edge of a ski piste on snow or an artificial piste or at the edge of any body of water or at the edge of a swimming pool.

The device according to the invention can be equipped at the top and at the sides with a rigid or flexible protection means. This equipment can be partially or completely opaque or transparent in order to allow more or less light to pass through. The positioning of this protection has the effect of protecting the persons using the device against bad weather and also of being able to retain the heat emitted by the heating system. This protection equipment, whether rigid or flexible, opaque or transparent, is designed in a manner which is simple to produce and so that it can be assembled and disassembled easily by persons without any special qualifications in this respect.

A lighting system which is of any design and of any size can be installed along the circuit using the structure itself of the device according to the invention as a fixing support. This variant is particularly useful for uses of the device during night-time outside on a non-illuminated site.

A heating system which is of any design and of any size can be installed along the circuit in its closed version. This installation can use the structure itself of the device according to the invention as a fixing support. This variant is particularly useful for uses of the device during cold periods and outdoors.

The device according to the invention can be installed in the open air or inside large premises. In the latter case, the installation of the device is reduced to the simplest form thereof because it does not comprise any protection against bad weather, nor any lighting or heating systems. The device can be temporarily installed by simply being positioned on the ground or installed more fixedly by the base of the posts being fixed on anchoring pillars which are cemented in the ground. In both cases, the device is permanently able to be disassembled and recovered without any damage.

Various variants which allow the device according to the invention to be used are provided for, without, however, departing from the scope of the invention.

At some locations of the circuit and perpendicularly to a rail, there can be positioned a platform which has a given length and height and which comprises an inclined plane at the entrance and another at the exit. In this case, the rail located above the platform substantially conforms to the shape of the platform. In that manner, the pupil permanently remains safe when he passes the obstacle.

Another version consists in constructing the platform, not with two inclined planes, but instead with several identical steps at the entrance and at the exit. The length and the height of that stepped platform are substantially identical to the platform having inclined planes. Consequently, the rail located above is identical for one version or the other.

At some locations of the circuit and perpendicularly to a rail, there can be hollowed out an uneven portion having a length, depth and shape which are identical to the platform having inclined planes, when the platform is considered to be in the inverted state. This uneven portion can be configured with steps at the entrance and at the exit. In both of these cases, the rail located above that uneven portion is the same as that used in the two preceding versions, but it is mounted in an inverted state.

At some locations of the circuit and perpendicularly to a rail, there can be positioned a jump having a given length and height. In that case, the rail located above remains straight. However, the rail can conform to a given shape in accordance with the length and the height of the jump.

5

Still without exceeding the scope of the invention, it is possible to install on the circuit other types of obstacle under rails which can be straight or curved in accordance with the geometry of the obstacles.

10 Partially sighted or blind persons can use the device according to the invention and even overcome obstacles. In this case, a system having an electronic sensor and an audible signal is activated when the person passes in front of or below the system which is located at a specific distance from the start of the obstacle, this distance still being the same,  
15 whatever the obstacle and on all the circuits.

Depending on the type of obstacle positioned on the circuit, the audible signal emits a different sound which is clearly distinctive and which informs the partially sighted or blind person of the exact configuration of  
20 the obstacle.

This system having electronic sensors and an audible signal can be arranged directly on the ground or at a given height on a support or directly on the upper portion of the rail.

25

In order to allow partially sighted or blind persons to move whilst remaining perpendicular to the rail, two signalling strips are fixed to the ground, temporarily or permanently and by any suitable means allowing good securing, at one side and the other of the axis of the track and  
30 equidistant relative to that axis located perpendicularly to the rail. The two signalling strips are always parallel. The spacing between those two strips depends on the height at which the rail is located. These signalling strips are similar to those which are found at the edge of some roads and which have the effect of causing the wheel of a car which drives over the  
35 signalling strip to vibrate. Any other mechanical, electrical or electronic method which allows a vibration or other signal to be emitted in order to

inform the person that his skate is deviating from the axis of the track can be installed. This or these same signalling system(s) can also be installed with the same spacing on the obstacles or uneven portions.

5 Some roller type carriages can be motorised. They are equipped with an electric motor which operates by means of a battery fixed to the carriage itself or which is directly supplied with electricity by the rail which is, in this case, consequently equipped in a manner conventional in the art. An electrical cable which starts from the carriage extends downwards as far  
10 as the level of the hands of the person and is provided with a small casing for manual controls. Use of this system is directed towards handicapped persons inter alia.

Another variant of the device according to the invention, still without  
15 departing from the scope of the invention, consists in allowing the pupil to learn acrobatic manoeuvres, and in particular forward or backward somersaults without any risk of falling and therefore without any apprehension. In that case, the pupil wears a new harness which is provided with two attachment points, one at each side, which are located  
20 above the centre of gravity of the person. Two straps of the same construction as that used in the case of a single strap, but being longer, are attached to the harness, each at one of the two attachment points of the harness. The upper portion of each strap is attached to a roller type carriage whose support plates are inclined. The two carriages are each  
25 installed on a different rail, those two rails having sufficient spacing to allow the pupil to move between the two straps. When this system is used by partially sighted or blind persons, the signalling strips are also installed at each side of the axis of the track.

### 30 USE OF THE INVENTION:

The device according to invention can be used to learn various sports or other disciplines.

35 During the first lessons, for example, in roller skating, the pupil adjusts his strap so that it remains slightly tensioned, the resilient portion in

spite of this allowing a small amount of movement downwards and to the sides. In this manner, the pupil cannot fall in any event and he therefore feels completely safe. The more he masters the technique, the more he slackens the strap and, finally, he moves without being held, as if there  
5 were no strap, but in the event of a mistake, his fall is stopped half-way and, in this manner, he cannot injure himself, as would be the case without the device according to the invention being used.

10 In order to learn to ski on snow or on an artificial piste using the device according to the invention, the gain in terms of time will be substantial for the pupil. When a novice pupil falls, he often takes a long time to get up again and if his falls are regular, he spends only a very small amount of time, during his training course, in learning to ski. The same applies when learning to ice skate.

15 With regard to practising skateboarding, the user can install a cord, or any other connection means, which has an appropriate length in order not to interfere with him and one end of which is fixed to the skateboard and the other to a location, such as his belt or his safety harness. This  
20 cord can comprise a resilient portion. In this manner, when the user loses his footing on the skateboard, he can readily recover the board without being obliged to unhook his strap. The same principle is used by surfers.

25 With regard to learning to swim, the pupil is equipped with a harness which is reduced to its most simple form and which is constituted, for example, by a simple flexible mini-waistcoat which does not inhibit movement and on the back of which a ring is fixed which is intended to be able to be attached to the strap. However, this strap, which is similar to that used for roller skating, can comprise a resilient, more flexible  
30 portion.

The device according to the invention can also be used for learning equestrian sports. In this case, the horse follows the track located perpendicularly to the rail, and in place of the signalling strips small  
35 barriers, or other systems, are provided, obliging the horse to remain in the axis of the track, that is to say, under the rail, whatever the layout of



the track. The rider wears a harness and is held on the rail by a strap, as in the case of learning to roller skate. The rail must be installed at a sufficient height for this type of use.

5 Another possibility for using the device according to the invention allows trick horse riding to be learnt without any risk of falling. In this case, the principle is the same as that already explained with regard to acrobatic manoeuvres made possible using two straps attached to the roller type carriages which each run on two different rails.

10

In order to allow the user to be positioned comfortably and without any risk, there is provided a low monobloc seat, of any construction, which is provided at the front of the base thereof with two hollow indentations which have an inclined bottom and which allow the user to sit down in  
15 order to put on his skates. The hollow indentations allow the skates to be positioned there in order to be able to stand up with the skates being prevented from moving. Consequently, the user can stand up in order to hook the spring hook of the strap in the ring of his harness without any risk of falling. The indentations are slightly longer than the largest  
20 existing skates. For improved immobilisation, the bottom of the hollow indentations is more or less inclined towards the front or towards the rear. Once upright and with his harness attached to the strap, the user can withdraw his skates from the hollow indentations and can begin to skate. At the start of the circuit and perpendicularly to each rail, a seat is  
25 positioned on the ground.

The device according to the invention, wholly or partially, can be judiciously used in a number of cases in which it is desirable to prevent  
30 persons from falling when learning given sports or during various training systems.

#### DESCRIPTION OF THE FIGURES:

FIGURE 1 is a front view of a carrier.

35 FIGURE 2 is a side elevation of a portion of the device according to the invention.

- FIGURE 3 is a perspective view of a cross-piece.  
FIGURE 4 is a perspective view of a post.  
FIGURE 5 is a detailed view of an assembly between two posts.  
FIGURE 6 is a sectional view of a rail with a locking flange at the top and  
5 a carriage below.  
FIGURE 7 is a perspective view of a locking flange.  
FIGURE 8 is a perspective view of a half-carriage.  
FIGURE 9 is a perspective view of the assembly of two rails.  
FIGURE 10 is a front view of a self-carrying carrier at the edge of a  
10 swimming pool.  
FIGURE 11 is an elevation showing a curved rail which is located above a platform and a person equipped with a harness and supported by a strap.  
FIGURE 12 is an elevation showing a curved and inverted rail above an  
15 uneven portion.  
FIGURE 13 is a perspective view of a seat.  
FIGURE 14 is a sectional view of a seat.  
FIGURE 15 is a front view showing a system allowing acrobatic manoeuvres, a device for audible signals and signalling strips.  
20 FIGURE 16 is a sectional view of a roller type carriage having different, inclined plates.

#### EMBODIMENT:

- 25 The structure of the device according to the invention can be produced with various materials, but it is preferable to construct it completely or partially from aluminium so that it can readily be handled during its production and during assembly and disassembly in situ. This lightness allows the size of packing cases and the costs of road, rail, sea or air  
30 transport to be reduced.

With reference to the drawings and as shown in Figure 1, the apparatus comprises carriers which are each composed of two posts (5) and a cross-piece (1). Figure 3 illustrates a cross-piece (1) which can be more or less  
35 long and which is composed of a rectangular tube (2), to which two assembly plates (3) and three securing plates (4) are welded, allowing the

locking flanges (15) to be bolted. The number of securing plates (4) depends on the length of the cross-piece (1). Figure 4 illustrates a post (5) which is composed of a carrier tube (6), at the bottom of which a square plate (9) is welded. At the upper and lower portion of the carrier tube (6), there are welded gusset plates (10), to which the tubes (13) and (14) are fixed. An assembly plate (7) which serves to hold the cross-piece (1) on the posts (5) by bolting is welded at the upper portion of the carrier tube (6). An angle bracket (8) is welded at the top of the post (5) between the carrier tube (6) and the assembly plate (7). Figure 5 illustrates an example of assembly between two posts (5). The tubes (13) and (14) are flattened at the two ends in the form of a perforated cap, allowing them to be bolted to the gusset plates (10). Figure 6 is a cross-section through a rail (11) which is held on the following rail by cover plates (12). A locking flange (15) is positioned on the upper portion of the rail (11). A roller type carriage (20) is illustrated at the lower portion of the rail (11), still viewed in cross-section. Figure 7 is a perspective view of a locking flange (15) which is composed of a perforated plate (16), to which a flat attachment piece (17) is welded at the centre and is fixed by means of bolting to the securing plates (4) of the cross-pieces (1). The flanged angle brackets (18) are bolted to the perforated plate (16) in order to be able to clamp the rail (11) powerfully. Figure 8 is a perspective view of a roller type half-carriage (20). The rollers (22) are held against the support plate (21) by bolts (24). The support plates (21) can be constructed so as to receive more than two rollers (22). The struts (23) hold the rollers (22) at the correct distance from the support plate (21). The hole (26) allows the upper portion of the strap (35) to be attached. Figure 9 is a perspective view of an example of assembly by means of bolting of two rails (11) by means of cover plates (12). Figure 10 illustrates a self-carrying carrier which is composed of a post (29) and a cross-piece (27). The post (29) is composed of a carrier tube (30), at the bottom of which a large square plate (31) is welded and is reinforced by angle brackets (32) which are welded between the carrier tube (30) and the large square plate (31). An assembly plate (7) which is identical to that welded to the post (5) and an angle bracket (8) which is identical to that welded to the post (5) are welded at the upper portion of the carrier tube (30). The post (29) is securely bolted to the anchoring pillars (33). The cross-piece (27), which can be longer or shorter, is

composed of a rectangular tube (28), to which an assembly plate (3) which is identical to those welded to the cross-piece (1) and two securing plates (4) which are identical to those welded to the cross-piece (1) are welded. The number of securing plates (4) depends on the length of the cross-piece (27). The locking flanges (15) which are not illustrated in Figure 10 are bolted to those securing plates (4). Figure 11 is a side view of a rail (34) which is located above a platform (42). The shape of the rail (34) is curved in order to substantially conform to the shape of the platform (42). The platform (42) is of any construction, but is sufficiently strong to withstand the efforts to which it is subjected. Figure 12 is a side view of a rail (34) which is located above an uneven portion (43). The shape of the rail (34) is the same as in the preceding case, but it is mounted in an inverted state and the shape of the uneven portion (43) is substantially similar to that of the rail (34). Figure 11 is, on the right, a side view of a person equipped with a harness (40) and supported by the strap (35). The harness (40) is preferably a piece of commercially available equipment of the type referred to as a building site harness, or the like. An attachment point (41), such as a ring which is sufficiently strong to carry out its function, must be located at the upper portion of the harness and approximately at the height of the shoulder blades of the user. The harness (40) can be a simple strap arrangement which extends only under the armpits of the person, or a more sophisticated piece of equipment which receives the entire body of the person. The strap (35) which forms the connection between the roller type carriage (20) and the ring (41) of the harness (40) is preferably composed of a flat strip (37), or a strip of a different shape, allowing the person to be held in complete safety. This strap (35) comprises, at the upper portion, a resilient portion (36) which is constituted by a draw spring or a rubber cord or any other system which allows greater or lesser extension. This resilient portion (36) is attached to the carriage (20) by any suitable means using the hole (26) of the carriage. The resilient portion (36) has the effect of making the initial stages of falls flexible and allowing the user some movement in an upward direction and to the sides. The length of the strip (37) is readily adjustable by the user owing to any buckle type system (38). The lower end of the strip (37) is provided with a securing system (39), with security means, of the spring hook type, or the like, which is easy for the user to

manipulate. This securing system (39) is fixed to the point of attachment (41) of the harness (40). The possible adjustment of the length of the strip (37) allows the user to pay out more or less slack in the strap (35) depending on the stage of his learning. Figure 13 is a perspective view of a  
5 seat (44) which is provided with two indentations (45). The seat (44) is monobloc, preferably of polyester plastics material, and is strong enough to receive any persons. At the front of the base of the seat (44), the two indentations (45) have the bottom inclined and are of sufficient length to receive the longest skates. Figure 14 is a longitudinal section of the seat  
10 (44) showing the relief allowing correct removal from the mould during production and the facility to stack the seats (44) for transport and storage which takes up little space. Figure 15 shows, on the right, the audible signal device (46) which comprises an electronic sensor (47) which emits a wave (48) which allows the vibrating device (49) to be activated  
15 when the person interrupts the beam of the wave (48) by passing into the field of the beam. The vibrating device (49) emits a sound (50) which can be adjusted in terms of power. The vibrating device (49) can comprise a control which allows it to be operated in such a manner that a plurality of different sounds can be programmed. The device (46) is preferably  
20 monobloc and configured in order to be able to be readily fixed, by any suitable means, to the rails (11) or (34). Figure 15 again illustrates, on the ground, signalling strips (51) which can be constituted, for example, by abrasive, coarse-grained strips which have the effect of acting in such a manner that a partially sighted or blind person can perceive the difference  
25 in travel of one of his skates when it travels over the signalling strip (51). The signalling strips (51) can be fixed to the ground or to the obstacles (42) or (43) by any system of adhesive bonding or any other means of fixing. Figure 15 further illustrates, at the centre, a system allowing the person to be able to carry out acrobatic manoeuvres. In that case, the new  
30 harness (52) comprises two points of attachment (41), one at each side of the harness (52) and located above the centre of gravity of the person. The two new straps (53) are of the same construction as the straps (35). The upper portions of the new straps (53) are attached under the new roller type carriages (54). Figure 16 is a sectional view of the new roller type  
35 carriage (54). The plates (55) and (56) are bent in accordance with a shape allowing them to be joined by the bolts (25). The hole (26) allows the

upper portion of the new strap (53) to be secured. The rollers (22) are the same as those mounted on the roller type carriages (20). The plates (55) and (56) are bent at the upper portion in order to support other rollers (22) which are held in the same manner as those mounted on the roller type carriages (20). Each plate (55) and (56) can be provided with more than four rollers. The bending of the bottom of the plates (55) and (56) is of an inclination substantially identical to that of the new straps (53). The roller type carriages (20) can also be configured with rollers in the upper portion.

It will be appreciated that other embodiments and production methods are possible and can be envisaged whilst remaining within the reach of the person skilled in the art and without departing from the scope of the invention.

#### INDUSTRIAL APPLICATION:

The device according to the invention is particularly intended for learning to roller skate, skateboard, ice skate, ski on snow and on artificial pistes, to swim and to ride a horse. The use of the device is directed, inter alia, towards sports schools, amusement parks, rental companies and fairgrounds.

The device according to the invention can be produced on a large-scale without any need for special machines.

This device is variable and the simplicity of its assembly allows it to be marketed as a progressive kit.